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NOTES ON THE RED-EARED FIRETAIL IN CAPTIVITY

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The following observations on the Red-eared Firetail (*Zonaeginthus oculatus*) in captivity were made between the end of 1960 to March, 1963. Although an aviculturist for considerable years the writer had not been engaged in the recording of serious behaviour observations until the latter part of this period.

METHODS

The size of the enclosure used was 36 ft. x 30 ft. x 10 ft. high. It was very profusely planted with numerous small trees, shrubs, plants and seeding grasses. Decaying vegetable matter carpeted the ground. One end was fully enclosed as a shelter. A plentiful supply of good bore water ensured continual dampness by means of fixed soaker hoses and sprays. Apart from the fact that most of the vegetation was not indigenous, similar conditions to the birds' natural habitat were striven for.

The majority of Australian and foreign finches previously kept—specially quarrelsome species—were removed from the aviary. Various Western Australian song-birds, such as *Malurus elegans* and *splendens*, *Petroica multicolor*, *Eopsaltria georgiana* and *Acanthiza chrysorrhoa*, were chosen as natural companions. Later *M. splendens* and *E. georgiana* were removed to nearby aviaries within sight and sound. Above all quietude was necessary and visitors were kept to a minimum.

It is well known that the Red-eared Firetail is naturally shy. Despite the fact that all the birds here are aviary-bred this inherent shyness is still apparent to a certain degree. So are other species of Australian and foreign finches here. I am convinced, if these birds are kept in captivity at all, that a large heavily planted aviary is essential. Quietude is vital. Avoidance of overcrowding must be unfalteringly observed. One can not be dogmatic about aviary size but I would suggest "extensive." Even a grandiose aviary would still be unsatisfactory if the correct conditions were not strictly adhered to. The Red-eared Firetail undoubtedly needs specialized treatment and unless aviculturists are prepared to give these birds these very uneconomical conditions this species should not be kept in captivity. They simply cannot be bunged into the usual overcrowded aviary of unsuitably mixed birds and be expected to survive. One must remember a century and a quarter of failures

demonstrates that it cannot be done. Nevertheless I have proved that given the right conditions they will not only survive but reproduce.

GENERAL BEHAVIOUR

When the "watchdogs" of the aviaries, the Banded Blue Wrens (*Malurus splendens*), pour forth their liquid danger calls, the Red-cared Firetails always dive into low foliage near the ground. It is amazing how they really plummet into a bush from high in the aviary and yet remain unscathed.

My wife and I are the only humans to enter the aviary—and only when strictly necessary. When the reason arises to enter, these birds sit immobile in the dense foliage and watch every move one makes. If approached too close they will slip away to a further secluded position. When strangers are in the garden—and this is not often—they are apt to show nervousness. If I approach and remain motionless near their nest the owners abide in a nearby shrub and silently move from branch to branch and peer. There are no apprehensive or scolding calls. They utter no sound nor is wing movement heard. As the birds proceed from one branch to the next they noiselessly tap with their beaks the perch on which they have alighted. Two taps are usual and are sometimes in the form of beak wiping. In the obscure and quiescent woods it gives one an almost eerie sensation to watch them. I like to imagine their uncanny beak tapplings are either ultra-sonic or visual signals—a mode of communication.

An interesting incident occurred when a hen Firetail was placed in a special photographic cage. The cage was removed from the aviary and placed out of sight of the aviary inmates. The usual escape flutterings took place but no audible call was made. Whilst photographing the bird I glanced at the aviary and was amazed to see the netting, close to where I was working, covered with clinging silent Firetails—no other species were there. Still no call was heard from either trapped bird or wire-clingers.

In the off breeding season these birds are amicable enough to their own and other species. As the breeding season approaches pugnacity is their theme—but only to their own species. At no time has hostility been displayed towards other species and vice versa. Food has to be widely scattered. If another Firetail, other than its mate, should alight nearby whilst a bird is feeding, it will be silently and ruthlessly attacked and driven off. The interloper invariably flees and will squeak with pain if a hit has been scored. Likewise the immediate nest vicinity is zealously guarded from their own species. As nightfall approaches their aggressiveness is accentuated. A favourite perching site for Gouldian Finches was only two feet away from a nest of Red-cared Firetails containing young. Gouldian babies were often fed at this spot yet the Red-cars were quite unperturbed.

When handled the Firetail utters no sound but if presented with the opportunity will bite (not peck) one's fingers very hard.

These birds are very active in the early morning when considerable flying and calling takes place.

The coastal climatic conditions at Scarborough appear quite suitable. It is indeed heartening to observe their fit condition during any cold snap in the weather—in contrast to the unhappy looking tropical species. Likewise extremes of heat have no distressing effect due probably to the moist conditions mentioned before.

Inquisitiveness is another of their traits and anything new will be immediately investigated.

If one sits quietly and imitates the Identity Call several birds will appear within a few feet. I am indebted to Syd and Joy Clapham (two keen bird watchers, who have "called up" the Red-ears to within 18 inches in their indigenous country) for the information that birds in the Wellington Dam district appear to have an affinity for a medium size shrub known locally as Soap Bush. Beyond knowing that the leaves of this favourite roosting site lather when rubbed between the hands I was unable to have it identified. For a time the Claphams kept in captivity two very young birds which on being liberated "went bush." These two birds returned every day to the homestead for seed accompanied by several other birds of the same species.

From Immelmann's observations (1960: 156), personal study, and from the evidence of aviculturists who have attempted to keep these birds in captivity, it is clear that the Red-eared Firetail is undoubtedly governed by a powerful territorial instinct and attachment to the home locality. For instance early in 1962 two out of six youngsters, seven weeks out of nest, were transferred to a separate aviary nearby. They became extremely upset and flew around the aviary ceiling and called incessantly, although there was no actual sign of blind panic or wire bashing due to the extensive aviary. It was necessary to replace them in their birthplace.

One ex-aviculturist known to me kept four Firetails for two and a half years in a large aviary. During an aviary reconstruction the birds were moved to another enclosure nearby. The four birds died within a week.

Bathing is really enjoyed and the birds will submerge in the protracted and happy process.

FEEDING

In captivity the usual seed fed to finches is partaken of, namely, white millet, Panicum, Japanese millet and plain canary. Green seeding heads of these together with crab grass, wild oats, wild canary and thistle heads are eagerly eaten. Special mention must be made of their liking for the heads of sword grass (*Lepidosperma gladiatum*). *Lepidosperma* could be an essential factor in their diet—both unripened and mature. Immelman refers to wild birds feeding on *Lepidosperma angustatum*. Mr C. Denny of Gnowangerup wrote me that some years ago he observed parties of about a dozen birds at Bremer Bay and Pallinup Estuary that "always seemed to be feeding on the seeds of the rushes that grow very thickly in swampy places." *L. gladiatum* has a rugged and apparently tough seeding head. Taking a stand on this seed head the birds wrench it to and fro—with a twisting motion of the head. The impression is gained

of stubborn power. When seeding heads are thrown in the aviary the Firetails are always the first to alight and commence to feed.

Seraps of seed and husks adhere to their bills whilst eating—for all the world like a small child with bread and milk happily plastered around his or her little mouth!

Birds will give an answering Identity Call without interfering with the tempo of their feeding. Newly-turned earth is eagerly picked over but I am unable to say what is eaten. At the period when the young would have been first hatched (judged from date of emergence from nest) the parent birds have been observed occasionally picking aphids off honeysuckle creepers and woodbines. Although termites are supplied *ad lib.* for various species the Red-eared Firetails will not touch them. I consider this most unusual as white ants are relished by most Australian and foreign finches.

During the spring several bunches of mixed indigenous wild-flowers were placed in the aviary. The Red-ears clambered through the foliage and were observed eating the seed.

When coming down to seed scattered in an open glade the birds fly to the shrubbery a few yards away and approach "on foot" through the undergrowth. Their behaviour in coming down to drink is similar. Taking a sip they hold their heads high to swallow. Several drinks are taken.

DISTINGUISHING THE SEXES

During the off breeding season the colouring of the sexes is identical. From about July onwards the sexes can be readily distinguished in sunlight. The cock's plumage assumes a deep and brighter hue than the hen. The cock's ear-flash becomes deep scarlet whilst that of the hen is more of an orange-scarlet. The male's red bill develops a dark overlay something similar to a Gouldian hen in breeding condition. In sunlight I am able to sex them at a distance of twelve feet without much difficulty—in shadow they need to be more closely examined. During the nesting period the hens carry their tail feathers high and appear a little fluffy as if out of condition but this is merely one of their traits.

CALLS

Identity Call: This was described by Immelmann (1960: 146). It can be heard every day throughout the year particularly in the early morning and evening. It has been variously described as loud, penetrating, mournful, monotonous and ventriloquial. I would also like to add it can be very pleasant—particularly on a still early morning when several birds are calling in diverse tones and from different distances. It has the delightful effect of mellow echoes rolling around the garden.

I have recorded seven variations of this call: (1) High key—cock. (2) Low key—hen. (3) A marked differentiation between the Identity Call of the cock and hen can be heard in the breeding season. The cock's call is as described aforeto whilst the female's call has a slight quaver. (4) When uttered by young independent birds, until their moult into adult plumage, the call has a strong tremor. (5) Repeated rapidly it is used as a Summons Call (see

later). (6) Whilst shepherding youngsters not long out of nest the Identity Calls of both parents assume a diverse resonance. Low and sweetly mellow, they are quite unlike the usual penetrating call. The mother's call has a most solicitous quaver. The baby answers with a quiet but sharp eicada-like note. (7) Youngsters can be heard practising the Identity Call after a few days out of the nest. It is very feeble with a decided quaver and sounds like a "toy whistle that wouldn't blow!"

Nesting Site Call: It is described by Immelmann as "ooweece uuuuu." It can be heard at all times of the day throughout the year. It is uttered also by young uncoloured birds. All the birds have their favourite dense bushes, some high, some low, in which they sit and give this call incessantly. This call can also be heard from within a nest. It sounds like a monotonous squeaking leather hinge on a Cobb & Co. coach! Whilst watching a bird from only a few feet away I have heard the call immediately followed by an almost inaudible "huh, huh, huh" mostly thrice, likened to expelling air from the nostrils and mouth at the same time. When emitting this call the bird puffs out his throat and breast. I have often heard a bird uttering the "Nesting Site Call" from a distance of 20 or 30 feet away, and, right at my feet in a clump of grass or fishbone fern, I have heard another bird answer with this curious "huh, huh, huh." For want of a better name I have called it the Huffing Call. In a noisy aviary the Huffing Call is not heard more than six feet away although I imagine it would be a little more pronounced in the quiet of the bushland. Until I realised its significance as a call it was often mistaken for the rustlings of dry leaves in the undergrowth. I have also heard a variation of the Huffing Call which sounds like "zst, zst, zst" but I think this may only be youngsters learning. The Huffing Call is always used immediately after, and in answer to, the Nesting Site Call. I would suggest that perhaps the Nesting Site Call is more of a territorial call.

Conversational Call: Another very quiet call I have dubbed the Conversational Call. This can only be heard a few feet away. I have recorded four variations: (1) A softly repeated "qwark." (2) A softly repeated "qwirk." (3 & 4) Both the foregoing repeated rapidly in a higher key. These calls are only heard when two birds are: (a) in close proximity in their leafy hide; (b) in the nest together; (c) feeding together (one bird will be observed feeding alone on the ground and as its mate alights the Conversational Call takes place).

Intimate Nest Call (Immelmann): I have not yet heard this call but, as mentioned before, have heard the Conversational Call in nests.

Flight Calls: The only occurrence of a call in flight is when one bird pugnaciously pursues another of the same species. A quickly repeated "cherk" can be heard. I am not aware whether pursuer or pursued calls.

Pain Call: A bird will give a squeak of pain if attacked and struck by another bird of the same species.

Alarm or Anger Call: A too close approach to youngsters will induce harsh notes from parents. Sounds like a "broody hen being removed from her nest."

Warbling: On December 28, 1962, I observed and heard one youngster (15 days out of the nest) standing high on perch and very loudly warbling quite happily. He then commenced to preen.

Feeding Call: The nestlings utter a very harsh and insistent feeding call ten or twelve days before leaving the nest. After a few days out of the nest the harsh cacophony is reduced somewhat with the introduction of a slightly higher note. When moving around more freely with their parents the young call "chick, chick" and then burst out into the raucous feeding call when fed.

Summons Call: A cock bird alights on perch carrying grass and loudly and rapidly repeats the Identity Call until joined by one or more birds of the same species (see Display).

DISPLAY

These birds will not display whilst aware of observers. Consequently I have not yet beheld display as described by Immelmann. Both coloured and uncoloured birds have displayed as follows:—

A cock will alight on a perch carrying a long dry or green grass stem. The extreme base of the grass stem is held by the tip of the bill with the grass head hanging down. The Identity Call is repeated loudly and rapidly as a Summons Call, with the closed bill still holding the grass, until from seemingly nowhere one, two or three birds will alight beside the cock. The displayer then arches his body until his head is below the perch. In this quaint position he jumps up and down usually thrice and repeats. A certain amount of what appears to be a form of beak wiping takes place by all present. Then all the birds fly out of sight into the low undergrowth. I have never observed copulation.

DEVELOPMENT OF COLOUR

These observations are typical of the few birds I have kept under scrutiny but of course individuals could differ with the period of their moult—even birds out of the same nest.

When first sighted, at say twelve feet, the youngsters appear an inconspicuous dull brown on the back and lighter brown underneath. Luminous (?) gape spots on both sides at the base of the bill are very prominent. From a distance of six feet one can observe a delicate tracery of markings covering most of the feathers. A dull red rump is also apparent. The lores are blackish, there is no red ear flash, and the bill is black. Kodachromes taken of youngsters eleven days out of the nest from 20 inches distance show the beautiful juvenile markings even more apparent.

The bill shows the first colour change to be observed. It is remarkable in how short a time the typical red bill of an adult appears. Fourteen days out of the nest the red colour is emerging. Another four days and the red is really conspicuous. Kodachromes taken just 22 days out of the nest show the beautiful red bill of an adult and the commencement of the moult. White spotting on the flanks appears first. All the adult plumage is in evidence before the red ear flash appears, last of all. The youngster out of the nest on November 13, 1962, took 91 days for the first sign of a red ear flash. Moult appears to take $3\frac{1}{2}$ to 4 months, quicker in the earlier hatchings than later in the season.

NEST BUILDING

Two types of nest are built. (A) Round sleeping nests are constructed in the off-breeding season. Young uncoloured birds build and complete these nests before the completion of the moult into adult plumage. Sites chosen have been out of sight on tops of pruned pencil pines, on netting supports amongst honeysuckle creepers (over water) and occasionally in dry brush under shelter. (B) Breeding nests are, of course, horizontal bottle-shaped structures up to 20 inches in length. In one case this season a complete new nest was built alongside and touching the old sleeping nest. In another instance a tunnel was added to an old sleeping nest. Youngsters were reared in both these nests. Dry and green grass is used. It appears as if the cock does most of the grass carrying whilst his hen waits within. Long grass is always carried as mentioned under Display. Small lining is carried bunched. The cock does not fly direct to the nest but to a nearby branch and takes a survey before flying to the structure.

The birds became very active after the first rains of the year. Nest building and grass carrying reached a high pitch in the first week in June 1962 when our drought was broken. Birds have been observed wrenching leaves off honeysuckle, *Casuarina* and tree lucerne to carry inside their nests. One pair, building in the top of a pruned pencil pine, would carry grass to the tree top and worm their way head down through the foliage. Orange-breasted Waxbills were building at the same time beneath the Firetails' nest. Sydney Waxbills (*Aegintha temporalis*) later took over this nest and reared young therein.

Star Finches (*Bathilda ruficauda*) and Sydney Waxbills have been observed to steal grass from nests of Firetails whilst the owners were absent.

One pair of Red-eared Firetails deserted their breeding nest when it became imperative to prune the creeper in which they had built because of likely damage to aviary netting. Three breeding nests have been inspected. The first nest was built in the shelter shed and was not located.

BREEDING

November 1960. Four eggs were obtained from a nest in a felled sapling and placed under Bengalese finches. Two nestlings hatched. No records kept.

Pair A. January 1962. Six young were reared from a nest in the shelter shed. Nest was not located. Parents fed their young.

Pair B. July 1962. A round sleeping nest was erected on the east end of a honeysuckle trellis. In September a bottle-shaped nest was built alongside the former and touching. On November 3rd a harsh feeding call was heard from within. I trembled over the inane Guy Fawkes celebrations of the 5th. Perhaps owing to the close proximity of a night light all was well. When a parent left the nest immediately after feeding its young it swooped swiftly to low shrubbery near the ground and about fifteen feet from the nest. A pair of Red-winged Wrens, particularly the hen, showed consider-



Fig. 1.—Young Red-eared Firetail.
6 days out of nest.

—Photos, A. Y. Pepper

able interest in this nest when young were within. On November 13th stormy and wet weather did not deter one youngster from emerging. The feeding call was heard up until the 29th November (sixteen days out of nest). To date young bird is well and strong.

Pair C. On November 30th, 1962, young were heard being fed in a nest built in a pruned pencil pine. On December 13th Red-winged Wrens were heard strutting excitedly. Investigation revealed two young Red-eared Firetails flying. They were not as well feathered nor as strong on the wing as the youngster from Pair B. As evening approached both parents were observed to shepherd both babies back into the nest. In the process one youngster perched on a tap handle and refused to budge. One parent flew slowly past the errant child and gently dislodged it. Feeding call was heard until

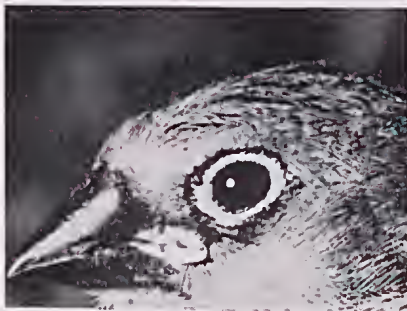


Fig. 2.—Head of young Red-eared Firetail.

7th January (25 days out of nest). Both have been successfully reared.

Pair D. On July 17th, 1962, a Red-eared Firetail was busy carrying grass to west end of honeysuckle trellis. (Six feet away on east end of trellis another pair were building. No interference was noticed possibly because the nests were round sleeping units only.) On 22nd July a bird broke off an entire green leaf of honeysuckle and disappeared into the nest with it. 24th July a Star Finch was robbing nest of grass whilst builders were absent. Red-eared Firetail kept chasing Star Finch away. On August 15th the cock was again observed carrying grass to nest with renewed vigour. Nest now bottle-shaped. This nest was deserted in September when pruning of creeper was imperative.

The same pair reconstructed their nest some time later by building a new entrance tunnel alongside the old. Feeding Call was heard on 12th January, 1963. Two well-feathered youngsters emerged on 24th January. Towards dusk of the same day one of these babies found itself too close to the nest still occupied by Pair B. Considerable fighting took place between Pairs D and B. Outcome unknown. At the time of writing these two youngsters are hale and hearty.

Similar species only are chased away from the vicinity of young. Both parents are anxiously in attendance when the young first emerge from nest and mellow Identity Calls are heard continuously.

The parent cock appears to do all the work in bringing the young to independence—possibly the hen goes to nest again. On one occasion a youngster was observed to ask its mother for food and was refused. But feeding is very difficult to watch as the parent always takes its offspring out of sight to feed.

Some youngsters are aggressively demanding for food.

BEHAVIOUR OF YOUNG

A youngster just five days out of the nest was noticed drinking alone at the pool.

One just four days out of the nest was observed perching on dead undergrowth. As my wife slowly approached the bird manoeuvred down into the sticks until out of sight and remained still.

There are favourite perching spots in the aviary where young are usually fed. In three cases during the 1962 season the one site was chosen for all—a *Feijoa sellowiana*.

The independent youngsters prefer to spend the greatest part of the day in the shelter shed.

One particular youngster had an unusual Identity Call quite unlike its brethren—a loud clearly defined "pee-yee-ee" with the usual tremor missing. I remember its feeding call was also more shrill and insistent.

One youngster seven days out of the nest was observed bathing with an adult bird.

REFERENCE

IMMELMAN, K. 1960. Contributions to the Biology and Ethology of the Red-eared Firetail (*Zonacginthus ocellatus*). *W. Aust. Nat.*, 7 (6): 142-160.